

Biofuel Projects in the Northwest



Energy, Parks, and Clean Cities: Gemstones in the Treasure State

Helena, Montana

June 15, 2004



Topics

- **Background**
- **Office of Biomass Program**
- **Biofuels Project**
- **Find Out More**



Background Oil Import Situation

- Imports are a large and growing share of U.S. petroleum consumption
 - ❖ 19.7 Mil. Barrels/day consumed
 - ❖ 10.6 Mil. Barrels/day net petroleum imports
 - ❖ 53.4% dependence on net petroleum imports
- U.S. crude oil production – 5.7 Mil. Barrels/day



Office of Biomass Program

- Biomass Program is a Consolidation of:
 - Biopower Technologies
 - Biofuels Technologies
 - Agriculture IOF and Black Liquor Gasification Research
 - Parts of Forest and Paper Products Vision

- Reorganization of Biomass Program responds to Congressional Directives and EERE Management Expectations
 - Biomass R&D Act of 2000
 - Implementation of Energy Title of Farm Bill
 - EERE Strategic Program Review

Office of Biomass Program

**Modular
Systems**

**Cellulosic
Ethanol**

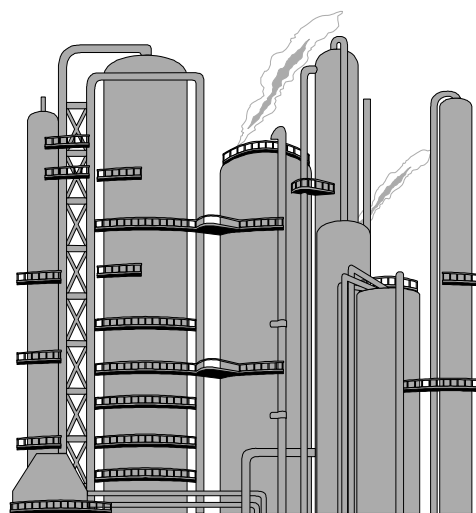
Biodiesel

**Gasification
of Biomass &
Black Liquor**

**Feedstock
& Harvesting
Logistics**

**Biobased
Products**

Hydrogen



Major goals: Development of
biorefinery and oil
displacement





Biofuel Projects

Pacific Region

- 1. Straw to Energy Initiative – Washington**
- 2. Cellulose-Ethanol Technology Development – Oregon**
- 3. Fish Oil Biodiesel – Alaska**
- 4. Biodiesel Facility – Hawaii**
- 5. B20 Outreach Project – Idaho**
- 6. Biodiesel for a Fuel Cell Project - Montana**



Biofuel Projects

Straw to Energy Initiative

- ❖ Joint project of PNNL, USDA, and Larry Albin
- ❖ Grass straw feedstock
- ❖ Three Phase Project
 - Technical Characterization, specifications, and economics
 - Facility construction
 - Catalytic process
- ❖ 2004 Congressional Earmark, \$750,000



Biofuel Projects

Cellulose-Ethanol Technology Development

- ❖ Joint project by U.S. DOE, ODOE, & MMP
- ❖ Grass straw feedstock
- ❖ Three Phase Project
 - Alkaline pre-treatment
 - Optimization of enzyme does rates & conversion efficiency
 - Test & demonstrate complete process
- ❖ \$92,400, U.S. DOE, ODOE & MMP funds



Biofuel Projects

Fish Oil Biodiesel

- ❖ Joint project by U.S. DOE, AEA & Steigers Corp.
- ❖ 3000-4000 raw fish oil
- ❖ Assess air emissions, fuel consumption, performance, & other characteristics of:
 - Raw fish oil
 - Transesterfied fish oil-diesel blends
- ❖ High speed 4-cycle diesel generator
- ❖ \$54,130, U.S. DOE & AEA funds

Biofuel Projects

Biodiesel Facility

■ Pacific Biodiesel

- ❖ Plants located in Oahu and Maui
- ❖ 100%-recycled vegetable oil
- ❖ Supplies Hawaii Volcanoes NP, tour boats/buses, transit buses, recycling trucks, rental cars

Oahu Biofuels Facility –
400,000 gallons annually



Maui Biodiesel Facility –
200,000 gallons annually





Biofuel Projects

Treasure Valley B20 Project

- ❖ Outreach and education focus
- ❖ Initiated in April 2002
- ❖ Buy down cost of biodiesel
- ❖ Approximately 273,000 gallons of B20
- ❖ Garbage/Recycling trucks, school buses, emergency response vehicles, city fleets, federal fleets
- ❖ Public B20 pumps in Boise and Nampa



Biofuel Projects

Magic Valley B20 Project

- ❖ Outreach and education focus
- ❖ Initiated in October 2002
- ❖ Buy down cost of biodiesel
- ❖ Approximately 50,000 gallons of B20
- ❖ Commuter/school buses, federal fleets
- ❖ Public B20 pumps in Twin Falls and Shoshone



Biofuel Projects

Montana Biodiesel for a Fuel Cell Project

Project Goal

- ❖ Evaluate the use of a renewable resource to produce hydrogen in a cold climate, high elevation, remote, stationary fuel cell application to provide heat and power

Project Approach

- ❖ 1st Field demonstration of a B100 fueled 5 kW fuel cell
- ❖ Operated at Yellowstone National Park – installed in the Xanterra Gardiner Montana Service Center



Biofuel Projects

Montana Biodiesel for a Fuel Cell Project

Objectives

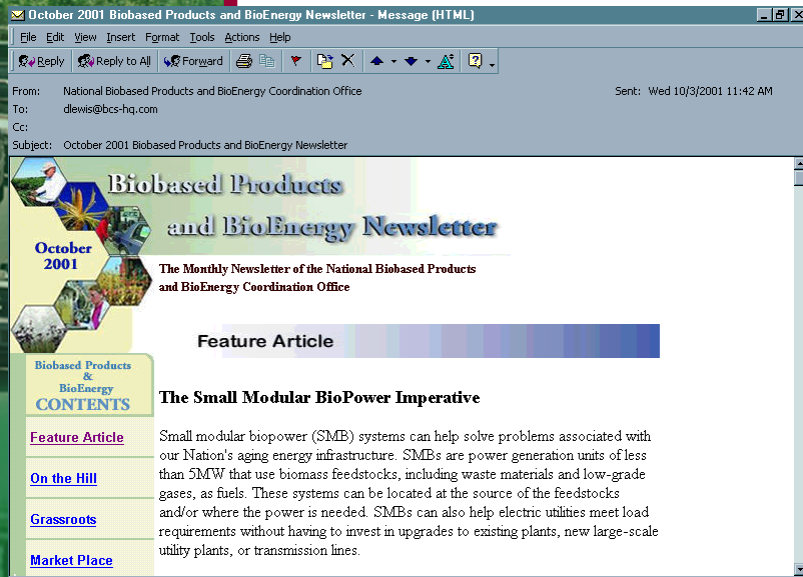
- ❖ Evaluate critical system component performance
- ❖ Promote understanding of hydrogen technology
- ❖ Develop and provide outreach materials

Project Partners

U.S. DOD, NPS, Leonardo Technologies Inc., Montana State University, MTDEQ, Montola Growers Inc., Xanterra, CTA Engineers and Architects, Northwestern Power Company

Find Out More!

Office of Biomass Program



<http://www.eere.energy.gov/biomass/>



Find Out More!

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